CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 90-102

WATER RECLAMATION REQUIREMENTS FOR:

CITY OF LIVERMORE
AND
CALIFORNIA DEPARTMENT OF TRANSPORTATION
LIVERMORE, ALAMEDA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board), finds that:

1. The City of Livermore (Producer) applied on June 20, 1990, for reissuance of water reclamation requirements for existing uses of reclaimed wastewater from the Livermore Water Reclamation Plant. The City of Livermore (User; hereinafter User and Producer will be called Discharger) and the California Department of Transportation (CALTRANS, hereinafter called User) are using or have recently used reclaimed water from the plant.

2. The Regional Board has previously issued water reclamation requirements for the City of Livermore in Board Order No. 85-46 (issued April 30, 1985), amended by Board Order No. 86-45 (issued June 18, 1986).

3. The Discharger presently provides secondary treatment of an annual average of 4.8 million gallons per day (mgd) of domestic and industrial wastewaters at its Livermore Water Reclamation Plant, in accordance with Order No. 89-100 (NPDES Permit CA0038008). Approximately 92% of the Discharger's flow is exported by the Livermore-Amador Valley Water Management Agency for discharge to Central San Francisco Bay. The remaining 8% of the treated effluent (0.37 mgd average in 1989, 3.5 mgd intended maximum) is reclaimed for irrigation of adjacent areas.

4. The treatment plant's 5 mgd reclamation facility (design capacity) consists of coagulation, filtration and chlorination after secondary treatment by activated sludge, and transport to a 1.88 mg reservoir located on Doolan Canyon Road. Reclaimed wastewater is drawn off as needed from the reservoir transmission line by the Discharger for golf course and landscape irrigation. CALTRANS has currently discontinued use of reclaimed water for landscape irrigation because the vegetation on site is drought tolerant. Reclaimed water use may be needed again in the future, and plumbing to transport water to the irrigation site exists. The 9 acres of discontinued CALTRANS freeway irrigation is fitted with a sprinkler system. The Discharger irrigates 154 acres at the Los Positas Golf Course, 2.5 acres of landscaping at the Livermore Municipal Airport, and 2 acres of landscape at the treatment plant. The Discharger irrigates by fixed sprinklers (see attached Figure 1). All irrigation areas are located within the Central Ground Water Basin of the Livermore-Amador Valley as defined in the Board's Basin Plan.

5. The Discharger has irrigated or supplied reclaimed irrigation waters to large areas, including farmlands, in the vicinity since 1967, but currently only plans to irrigate the golf course, airport, and treatment plant areas. Future airport expansion and construction may revise the golf course configuration, but the total irrigated area will remain approximately the same.

The Discharger and CALTRANS have negotiated an agreement for the use of reclaimed water on the State's right-of-way. The agreement provides for the City to furnish water which will meet the prescribed requirements of this Order and submit to this Board the required self-monitoring reports.

6. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Region (Basin Plan) in December, 1986. The beneficial uses of the Central Groundwater Basin as identified in the Basin Plan are:

   Industrial service and process supply
   Municipal supply
   Agricultural supply

7. Since 1987 the Discharger has mitigated for possible effects of reclaimed water use in the Central Groundwater Basin. To alleviate any possible build-ups in total dissolved solids (TDS) the Producer diverts flows high in TDS from an unnamed tributary to Altamount Creek (see Figure 1), into the treatment plant headworks, and ultimately discharges that flow through the Livermore-Amador Valley Water Management Agency (LAVWMA) pipeline. Waters extracted at the tributary have TDS values of approximately 5400 mg/L, while reclaimed water has TDS values of approximately 700 mg/L. In 1989 an average of 370,000 gallons per day of wastewater was reclaimed, and approximately 2300 gallons per day of creek flow was diverted, and ultimately discharged through the LAVWMA pipeline..

   The reclaimed water supplied for irrigation in 1989 contributed approximately 2,104 lbs/day to the TDS load of the Central Basin, while the mitigation exported approximately 120 lbs/day of TDS. This resulted in a net increase of approximately 1,984 lbs/day of TDS to the Central Basin. Reclaimed water meeting the permit limits of 250 mg/L TDS would have contributed 770 lbs/day of TDS to the groundwater basin.

   The short-term effectiveness of the mitigation has been reduced by the current drought, which has caused decreased flows in the unnamed stream being diverted for mitigation. Because the reclamation is currently resulting in a net increase in TDS to the system, the discharger should investigate other options for additional mitigation for increasing TDS levels.

8. Section 13523 of the California Water Code provides that a Regional Board, after consulting with and receiving the recommendations of the State Department of Health Services, and if it determines such action to be necessary to protect the public health, safety, or welfare, shall prescribe water reclamation requirements for water which is used or proposed to be used as reclaimed water. The use of reclaimed water for the purposes specified in Finding 4 could affect the public health, safety, or welfare, and requirements for those uses are therefore necessary in accordance with the Water Code.

9. This Order's requirements conform with and implement the wastewater reclamation criteria of the State Department of Health Services (22 CCR 60301 et. seq.) to protect the public health, safety, and welfare.

10. These water reclamation requirements conform with current state and local policies for protection of surface and ground waters. These projects are considered a minor alteration

to land and as such are exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000 et seq.) in accordance with 14 CCR 15104.

11. The Board has notified the dischargers and interested agencies and persons of its intent to update water reclamation requirements for the proposed uses.

12. This Board, at a public meeting, heard and considered all comments pertaining to this reuse.

IT IS HEREBY ORDERED, that the City of Livermore and California Department of Transportation, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

A. Reclaimed Wastewater Use Specifications

1. The treatment, distribution, or reuse of reclaimed wastewater shall not create a nuisance as defined in Section 13050 (m) of the California Water Code.

2. Reclaimed wastewater shall be used only to irrigate the facilities as described in Finding 4 and as shown on Attachment 1.

3. The reclaimed water for use on landscape irrigation shall be at all times an adequately disinfected, oxidized water and shall meet the following quality limits at all times:

Constituent	Maximum concentration
a. 5-day BOD	30 mg/L, monthly average, 60 mg/L daily maximum
b. Dissolved oxygen	1.0 mg/L minimum
c. Dissolved sulfide	0.1 mg/L maximum
d. Coliform organisms	Median MPN shall not exceed 23 coliform organisms per 100 milliliters of sample or 240 MPN/100ml for any two consecutive samples at some point in the treatment process. The median value will be determined from the bacteriological results of the last seven analyses.
e. Total dissolved solids	250 mg/L maximum

4. The Board may revise or add to these specifications at a later time to assure attainment and/or maintenance of Basin Plan groundwater and/or surface water objectives.

B. Reclaimed Wastewater Use Limitations

1. No reclaimed wastewater used for irrigation shall be allowed to escape to areas outside the disposal areas, either by surface flow or airborne spray.

2. The use of reclaimed wastewater shall not cause degradation of the groundwater of the Central Ground Water Basin of the Livermore-Amador Valley suitable for domestic use

nor cause ground waters to exceed the following specific water quality objectives more that 10% of the time during one calendar year:

Constituent	Maximum Concentration
Total dissolved solids	500 mg/L
Nitrate as nitrogen	10mg/L

Where the groundwater exceed the above concentrations due to natural causes, the Producer and Users shall not cause further degradation.

3. The use of reclaimed wastewater shall not cause rising groundwater discharging to surface waters to impair surface water quality objectives or beneficial uses.

4. Reclaimed wastewater shall be applied to use areas in a manner which will minimize public contact with or exposure to the wastewater in compliance with the California State Department of Health Services "Guidelines for use of reclaimed water irrigation and impoundments."

5. Irrigated areas, including golf course ponds, and all equipment used in conjunction with reclaimed wastewater use shall be clearly identified with posted notices to the public and managed to conform with the California State Department of Health Services "Guidelines for use of reclaimed water irrigation and impoundments" and "Guidelines for worker protection at water reclamation use areas."

6. No reclaimed wastewater shall be applied to the use areas during periods of rainfall or when soils are saturated.

7. If an effluent or use requirement is violated, the Discharger or User shall immediately terminate discharge to the irrigation area until such violation is corrected and measures are implemented to assure it will not reoccur.

8. CALTRANS shall notify the Discharger within 30 days of the need for reclaimed wastewater prior to initial irrigation.

9. No reclaimed water shall be applied to any area not specified for such use in Finding 4 above until the discharger has submitted plans and has received written approval from the Executive Officer. The Executive Officer will consider the review, comments, and approval of the plans by Zone 7 of the Alameda County Flood Control and Water Conservation District.

C. Provisions

1. The requirements prescribed by this Order supersede the requirements prescribed by Order Nos. 85-46 and 86-45. Order Nos. 85-46 and 86-45 are hereby rescinded.

2. The Discharger shall comply with all requirements of this Order immediately upon adoption. The Producer's compliance with Specification A.3.e. and Limitation B.2 shall be according to the following schedule:

Task	Date of Completion
1. Submit a report on the effectiveness of and any modifications to the mitigation program.	October 1, 1990
2. Submit a report on additional alternatives for mitigating total dissolved solids build-up in the Central Basin.	November 1, 1990

3. The Discharger shall comply with the self-monitoring program as adopted by the Board. The Producer and Users shall submit to the Board self-monitoring reports as specified in the attached Self-Monitoring Program.

4. The Producer and Users shall maintain in good working order and operate, as efficiently as possible, the facility and control system to achieve compliance with these requirements.

I, Steven R. Ritchie, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region on July 18, 1990.

Steven R. Ritchie
Executive Officer

Attachments:

Figure 1 - Map of areas irrigated with reclaimed water
Self-monitoring Program
Standard Provisions, Reporting Requirements and Definitions (December, 1986)
CSDHS-Guidelines for use of reclaimed water for irrigation and impoundments
Guidelines for worker protection at water reclamation use areas

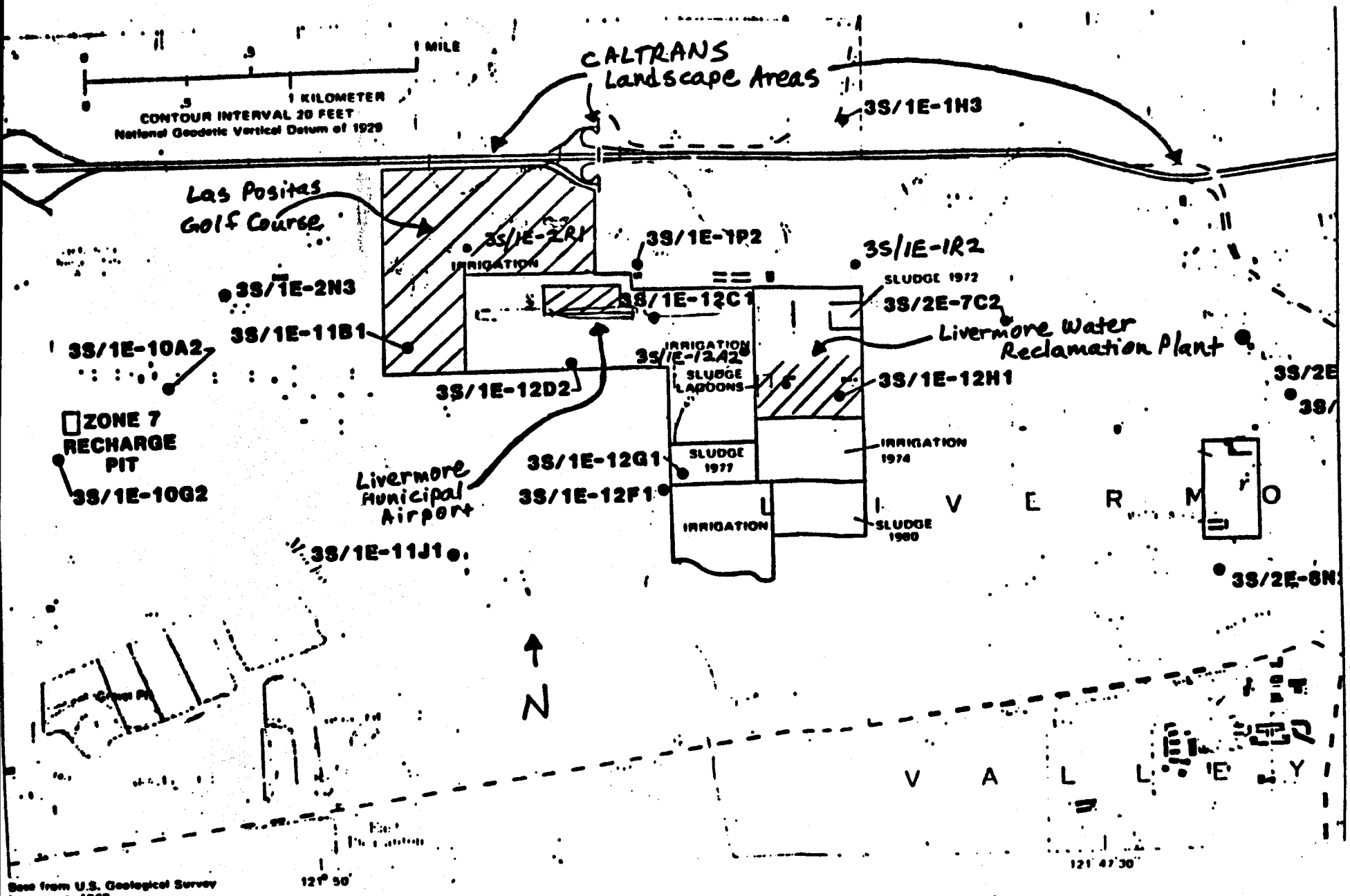

FIGURE 1 - Map of Irrigation Areas for Reclaimed Wastewater
Use and Locations of Groundwater Monitoring Wells

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF - MONITORING PROGRAM
FOR
CITY OF LIVERMORE
LIVERMORE WATER RECLAMATION PLANT
STATE DEPARTMENT OF TRANSPORTATION

ORDER NO. 90-102

Consisting of:

Part A, dated December, 1986
and
Part B, adopted July 18, 1990

PART B

I. DESCRIPTION OF SAMPLING STATIONS

A. EFFLUENT - RECLAIMED WASTEWATER

STATION	DESCRIPTION
E-1	At a point in the disinfection facilities of the City of Livermore, Water Reclamation Plant (WRP), for the treated effluent at which point adequate disinfection is assured prior to its use on a landscape area.

B. GROUND WATERS

STATION	DESCRIPTION
G-1	Background monitoring well-upgradient. (State well 3S/1H3, well depth 80 ft.)
G-2	Las Positas Golf Course monitoring well - within irrigated area. (State Well 3S/1E - 2R1, perforation depth 21-26 ft.)
G-3	Las Positas Golf Course monitoring well - within irrigated area. (State Well 3S/1E - 11B1, perforation depth 33-38 ft.)
G-4	Background monitoring well - upgradient of WRP. (State Well 3S/2E - 7C2, depth 49 ft.)
G-5	Airport monitoring well - upgradient. (State Well 3S/1E - 1P2, perforation depth 40-45 ft.)
G-6	Airport monitoring well - upgradient. (State Well 3S/1E - 12D2, perforation depth 36-41 ft.)
G-7	WRP monitoring well - within irrigation area. (State Well 3S/1E - 12A2, depth 69 ft.)
G-8	WRP monitoring well - downgradient of irrigation area. (State Well 3S/1E - 12G1, depth 75 ft.)
G-9	Background monitoring well - upgradient/stream. (State Well 3S/1E - 1R2, depth 56 ft.)

Measurements may be coordinated with Zone 7 of the Alameda County Flood Control and Water Conservation District. The Discharger shall be responsible for obtaining and reporting groundwater monitoring data and test results.

C. MITIGATION EFFLUENT

STATION	DESCRIPTION
I-1	Water in the unnamed tributary to Altamount Creek, at the point of diversion for mitigation.

D. LAND OBSERVATIONS

Stations	Description
C-1 to C-n	Located along Arroyo Las Positas within the Las Positas Golf Course at road and walkway crossovers.
F-1 to F-n	Located at sufficient number of points at the Caltrans irrigation areas in order to ensure compliance with wastewater reclamation requirements.

The Discahrger shall be responsible for all C stations and shall submit a location map of these stations with the annual reports. Caltrans shall be responsible for all F stations and shall submit a location map of these stations with each report.

II. SCHEDULE OF SAMPLING, ANALYSIS, AND OBSERVATIONS

A. The schedule of sampling, analysis, and observations shall be that given in Table 1.

III. REPORTING

A. The Discharger shall submit joint monthly reports by the 15th day of the following month.

B. The Discharger shall submit joint annual reports by the 15th day of January, every year, on the effectiveness of the foregoing year's mitigation. Well log and construction data shall be contained in the annual report.

C. The Discharger shall comply with all monitoring requirements for effluent, ground water, and C land observation stations.

D. The User shall comply with all monitoring requirements for the F land observation stations and shall report the time, date, and location of the User's violations and the corrective action taken. The User shall notify the Discharger of these violations when they occur.

E. The Discharger shall report:

1. The time, date, and location of the Discharger's violations,

2. The time and date wastewater service to the Discharger's or User's irrigation area was cut off because of a violation, and when service was resumed, and,

3. The corrective action taken by the Discharger.

I, Steven R. Ritchie, Executive Officer, hereby certify that the fore-going Self-Monitoring Program:

1. Has been developed in accordance with the procedures set forth in this Regional Board's Resolution No. 73-16, in order to obtain data and document compliance with Waste Discharge Requirements established in Regional Board Order No. 90-102.

2. Has been ordered by the Regional Board on June 18, 1990.

3. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the discharger, and revisions will be ordered by the Executive Officer.

Steven R. Ritchie
Executive Officer

Attachments

Table 1

TABLE 1

SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS

SAMPLING STATION	E-1R			All G Sta.	All C Sta.	All P Sta.	I-1
TYPE OF SAMPLE	C-24	G	Cont.	G	0	0	Cont.
Flow Rate (mgd) (1)			D				
BOD, 5-day, 20 C, or COD (mg/L & kg/day)	3/W						
Chlorine Residual & Dosage (mg/L & kg/day)							
Settleable Matter (ml/hr. & cu.ft./day)							
Total Suspended Matter (mg/L & kg/day)							
Oil and Grease (mg/L & kg/day)							
Coliform (total) (MPN/100 ml) per req't		3/W					
Fish toxicity-96 hr. Surv'l in undiluted waste							
Ammonia Nitrogen (mg/L & kg/day)							
Nitrate Nitrogen (mg/L & kg/day)		3/W		3M			
Nitrite Nitrogen (mg/L & kg/day)							
Total Organic Nitrogen (mg/L & kg/day)							
Total Phosphate (mg/L & kg/day)							
Turbidity (Jackson Turbidity Units)		E					
pH (units)							
Dissolved Oxygen (mg/L & % saturation)		3/W					
Temperature (C)							
Apparent Color (color units)							
Secchi Disc (inches or cm.)							
Sulfides (if DO<1.0 mg/L) Total & Dissolved (mg/L)		3/W					
Arsenic (mg/L & kg/day)							
Chromium, Total (mg/L & kg/day)							

TABLE 1 (Cont.)

SAMPLING STATION	E1-R			All G Sta.	All C Sta.	All F Sta.	I-1
TYPE OF SAMPLE	C-24	G (3)	Cont.	G	O	O	Cont.
Cadmium (mg/L & kg/day)							
Copper (mg/L & kg/day)							
Cyanide (mg/L & kg/day)							
Silver (mg/L & kg/day)							
Lead (mg/L & kg/day)							
Mercury (mg/L & kg/day)							
Nickel (mg/L & kg/day)							
Zinc (mg/L & kg/day)							
Selenium (mg/L & kg/day)							
Phenolic Compounds (mg/L & kg/day)							
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/L & kg/day)							
All Applicable Standard Observations					O	O	
Total Dissolved Solids (2) (mg/L & lbs/day)		3/W		3/M			D
Chlorides (mg/L & lbs/day)				3/M			
Full Ion Analysis (mg/L)	3/M						
Priority Pollutants (3)	Y						

LEGEND FOR TABLE

TYPES OF SAMPLES

G = grab sample
C-24 = 24 hour composite sample
C-X = X hour composite sample (used when discharge does not continue for 24 hour period)
Cont. = continuous sampling
DI = depth-integrated sample
BS = bottom sediment sample
O = observation

TYPES OF STATIONS

I = intake and/or water supply stations
A = treatment facility influent stations
E = waste effluent stations
C = receiving water stations
P = treatment facilities perimeter stations
L = basin and/or pond levee stations
B = bottom sediment stations
G = groundwater stations

FREQUENCY OF SAMPLING

E = each occurrence
H = once each hour
D = once each day
2/H = twice per hour
2/W = 2 days per week
5/W = 5 days per week

FOOTNOTES TO TABLE 1

1. Measure and record daily the volume of reclaimed wastewater used for irrigation of each designated use area.

2. Total Dissolved Solids shall be measured and reported in units of mg/L and lbs/day.

3. The priority pollutant sampling program may be modified by the Executive Officer after the first year's sampling data is evaluated.